Husky Energy

White Rose Extension Project (WREP) – Prequalification
Wellhead Platform (WHP) CONCRETE GRAVITY STRUCTURE (CGS) - CONSTRUCTION
Reference # 8.34.1.080

Husky Energy Inc. (Husky), operator of the White Rose Field and satellite extensions, is seeking prequalification responses from interested companies / consortia / joint ventures for the construction of a Concrete Gravity Structure (CGS) for the White Rose Extension Project (WREP).

Husky and its co-ventures are presently evaluating the development of a wellhead platform to enable future extension at the White Rose field. The White Rose Field and satellite extensions are located approximately 350 kilometers east-southeast of St. John's, NL in the Jeanne d'Arc Basin. Husky utilizes a Floating Production, Storage and Offloading (FPSO) vessel, the *SeaRose*, for production at the fields. The Wellhead Platform would include topsides supported by a concrete gravity structure (CGS).

The CGS is planned to be constructed at a dedicated graving dock site to be located at Argentia, NL. .

General Requirements

Interested companies / consortia / joint ventures must be qualified to conduct the work as summarized in the Scope for Concrete Gravity Structure - Construction below and are asked to demonstrate their capabilities, capacities, and experience via a formal response to the detailed Prequalification Questionnaire located on the website at:

http://www.huskyenergy.com/operations/growthpillars/atlantic/opportunities/default.asp

Please note that any updates, bulletins and/or clarifications to the above noted Prequalification will be posted on the website. Please check regularly during the pre-submission period for any updates that may be posted.

Scope for Concrete Gravity Structure - Construction

The WHP will comprise of a CGS with topsides [the scope of a separate pre-qualification proposal] consisting of drilling facilities, wellheads and support services such as accommodations, utilities, flare boom and a helideck. All produced fluids will be transported via subsea flowlines from the western region of the White Rose Field to the *SeaRose FPSO* for processing, storage and offloading; there is no oil storage in the CGS. The design of the WHP will account for the risks posed by icebergs, sea ice and the harsh environmental conditions on the Grand Banks offshore Newfoundland and Labrador. The productive life of the WHP facility is 25 years.

The current schedule is for Contract award late Q4 2013, with mobilization to site Q1 2014 and start of CGS construction by early Q2 2014.

All concrete construction of the CGS and the associated mechanical outfitting work will be completed in a purpose built, de-watered, graving dock in Argentia, Newfoundland (refer to Figure 1). Upon completion of the CGS, the CGS structure will be floated to a deep-water site, where it will be mated with the topsides structure. The WHP will then be towed to and installed in the western region of the White Rose Field and tied back to the *SeaRose FPSO* in Q3 2016 (refer to Figure 2)

Figure 1: CGS in the Graving Dock

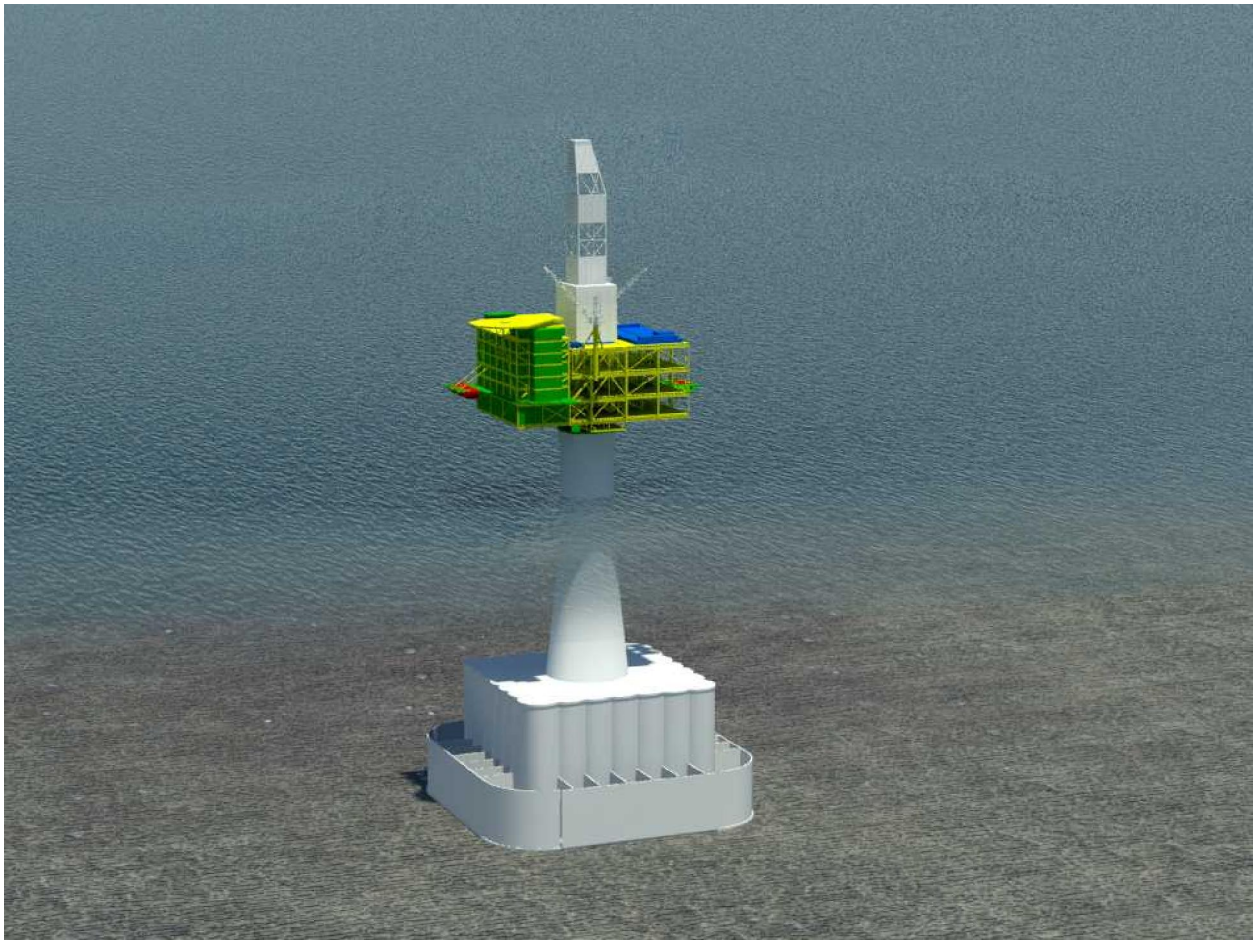

Figure 2: WHP on the location in the White Rose Field

The graving dock construction site at Argentia (refer to Figures 3) will be made available to the CGS Construction Contractor after completion (by others) of the excavation of the graving dock and establishment of associated local infrastructure, e.g. access roads, electrical power, mains water supply, communications all provided to a common location at the perimeter of the security fence to be established around the 20 hectares of land. The Contractor will mobilize to site and establish within the site boundary his facilities necessary to manage the site, and construct and outfit the CGS.

Figure 3: Graving Dock Site Location

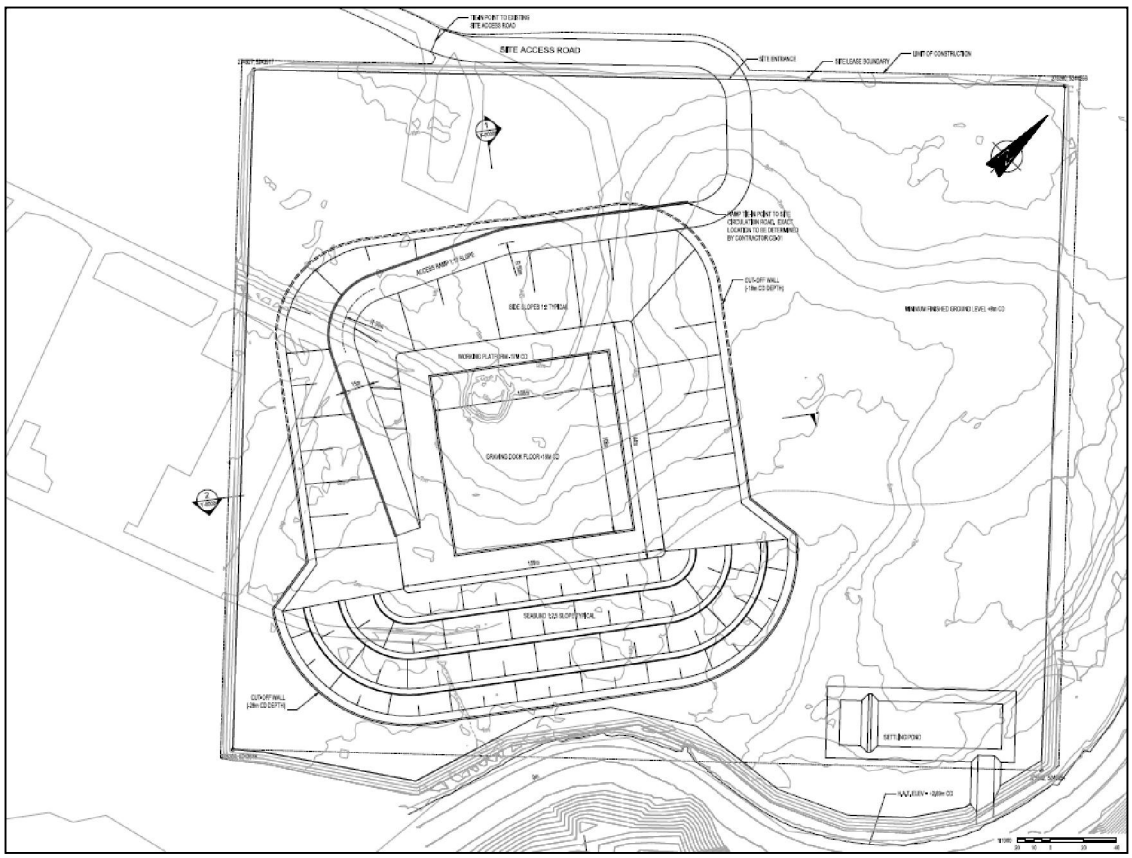

Figure 4: Graving Dock Construction site Plan

The scope of work for the construction of the CGS shall include, but not be limited to, the establishment of the CGS construction site, site management, site storage and transportation, maintenance of dewatering systems, mass reinforced concrete base slab pours, extensive slipforming of reinforced concrete walls, mass reinforced concrete roof slabs, reinforced concrete shaft slipforming, structural and piping fabrication and installation, pre-commissioning and commissioning of process, utility and ballast pipework and interface with the marine contractor.

Support facilities shall include but not necessarily be limited to a concrete batching plant, offices, a mess hall, a medical clinic, sewage treatment plant, temporary sheds, lay down areas and storage areas for the materials required to construct the CGS. Labor to construct the CGS will travel to site and hence there will be no requirement for an onsite labor camp. The construction site will be fully fenced with a security-controlled entrance. The Contractor shall distribute the necessary utilities within the site from pre-established connection points at the boundary of the site. These will include electricity supplies to provide power for the batching plants and tower cranes required for the construction and water supplies for concrete production and personnel use. A packaged sewage system shall be provided by the CGS Contractor to cater for the site offices and mess facilities.

Throughout the construction of the CGS the Contractor shall be responsible for the operation and maintenance of the permanently installed dewatering system within the graving dock to ensure that the dock floor remains dry and the sides of the graving dock stable throughout the construction period. This will include the management and disposal of the ground water in accordance with an agreed Environmental Protection Plan.

The primary materials for the CGS are cement, sand, gravel and steel reinforcement for the high-strength concrete, and structural steel and pipe for the mechanical fit out with the shaft.

Initially a series of conventional mass concrete pours will be undertaken to construct the reinforced concrete base slab of the CGS. Seawater ballasting pipework will be cast into the base slab to allow the CGS to be flooded, towed and ballasted to install it in position on the Grand Banks.

Following base slab construction a series of slipforms will construct the base caisson to a height of 50m above dock floor. The continuously moving slipforms will require 24 hour operations to ensure a continuous structure without horizontal joints.

The roof slab of the caisson will be constructed by installing prefabricated steel support beams across the top of the walls, laying steel shuttering and constructing the reinforced concrete slab using conventional methods.

The single tapering cylindrical shaft of the CGS, extending to 85m above the caisson roof, will be constructed by slipforming techniques to ensure a continuous concrete structure.

The current estimate of the required volume of high strength concrete in the entire structure is approximately 64,000m^3. Figure 5 provides an insight into the overall geometry of the CGS and the various different work packages that are generally described above.

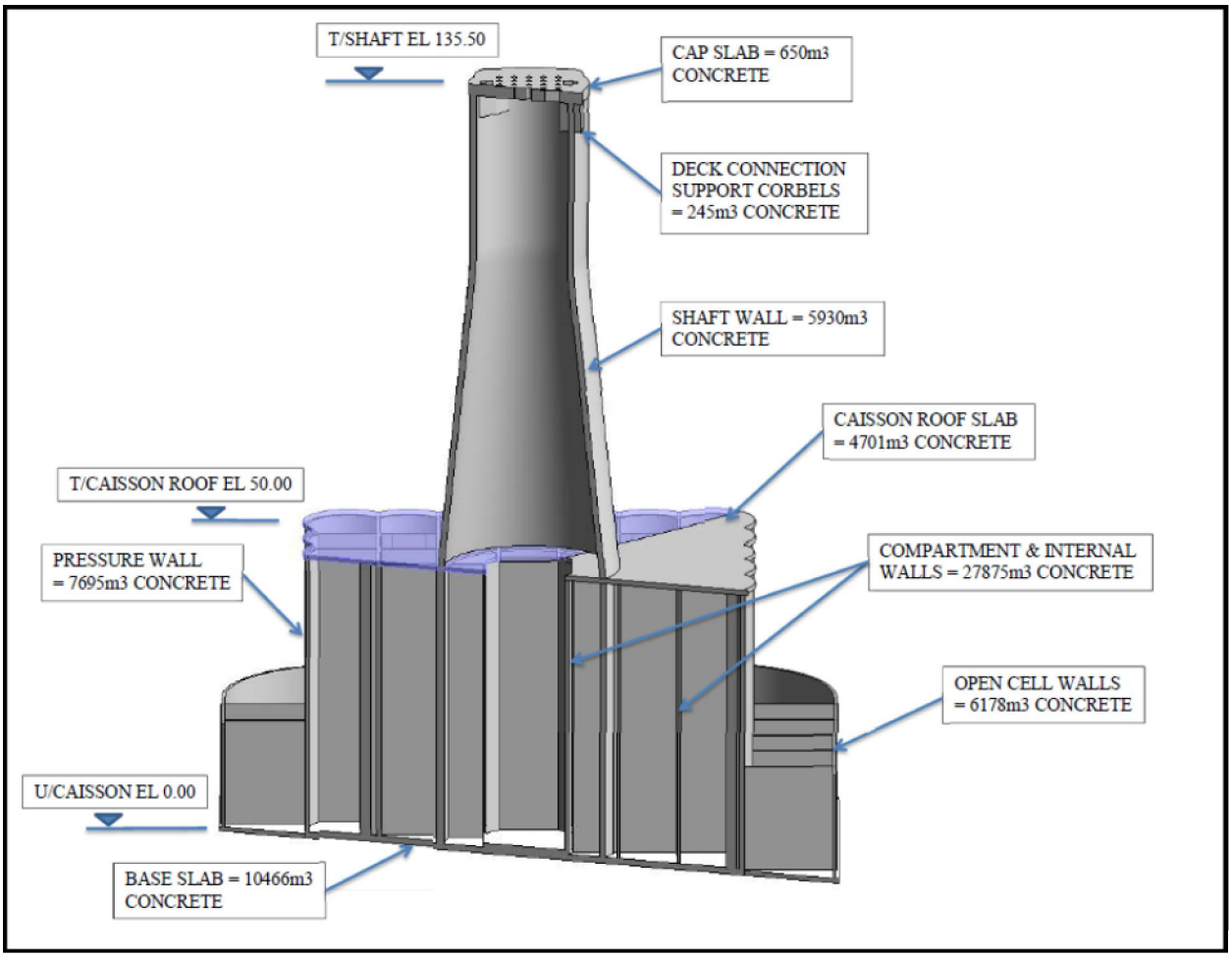

Figure 5: Concrete Components

Caisson and shaft steel supports will be cast into the concrete during the various slipform operations for future use when completing the mechanical fit-out of the CGS.

The mechanical fit-out of the CGS will consist of the installation of prefabricated components that will be installed at various phases of the base slab, caisson and shaft construction (refer to Figure 6). The majority of the mechanical outfitting occurs in the central shaft. Fabricated structural steel conductor guide frames will be installed. These will also support a series of risers, J-Tubes and caissons which will carry production fluids from the WHP and provide service connections from the *SeaRose* FPSO.

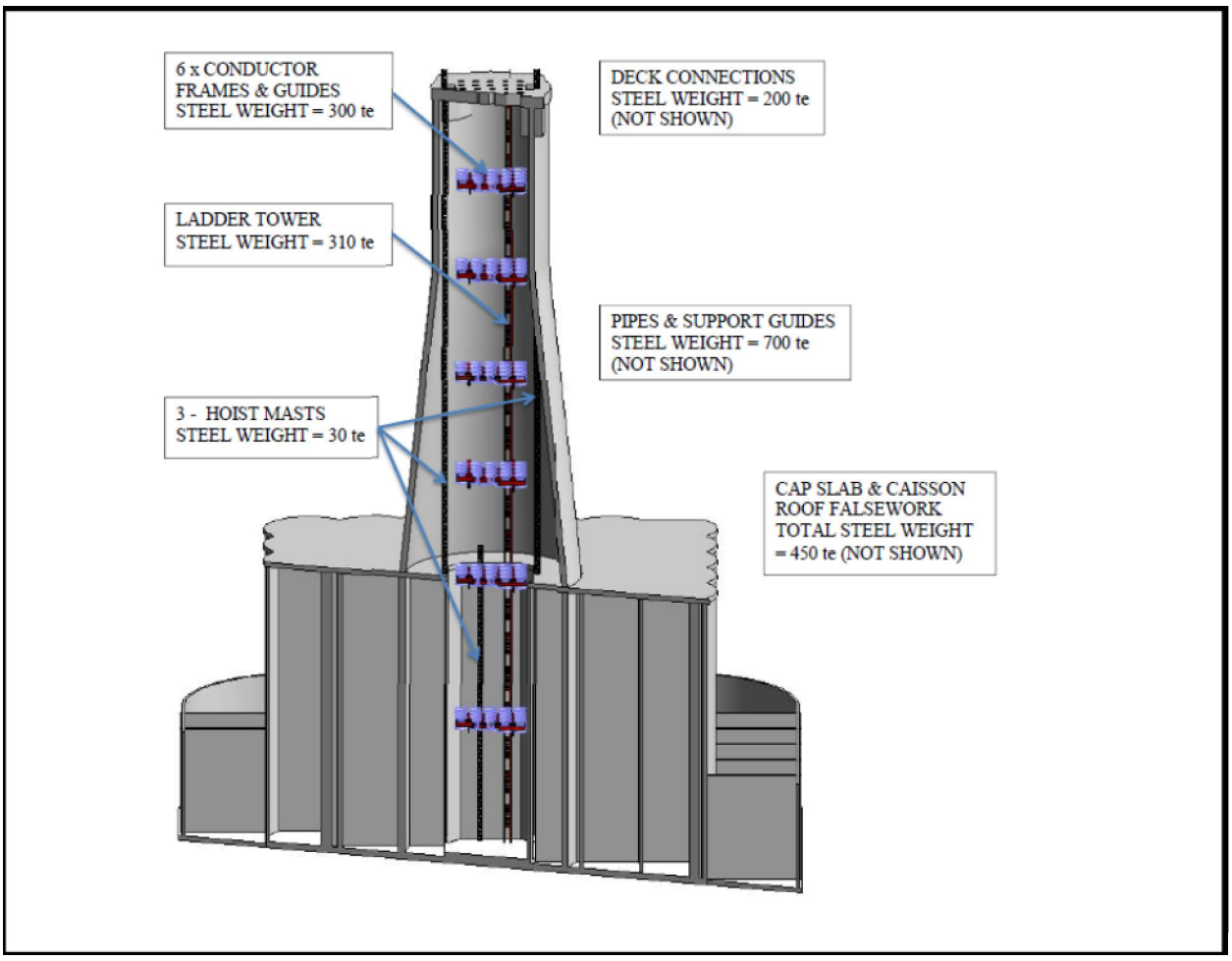

Figure 6: CGS Mechanical Fit-Out Scope

The ballast pipework installed in the base slab will be connected to a series of pumps and manifolds located within the shaft to allow the structure to be flooded in a controlled manner during offshore installation.

In addition, there will be access ladder towers and mechanical hoists to facilitate movement of personnel and materials within the shaft.

Fabrication will be undertaken offsite and the components brought to site in suitable sizes able to be lifted into the base of the shaft for lifting and hook up inside the structure.

High strength steel deck connection assemblies will be lifted and installed at the top of the shaft to facilitate the hook up of the topsides.

Following the completion of mechanical outfitting, the various high pressure pipework systems will be pre-commissioned and pressure tested to ensure their integrity. All other process, ballasting and utility systems will be commissioned to ensure they are fully functioning prior to float out.

In addition to the CGS, facilities will be installed on the construction site to allow the dock to be flooded and the sea bund removed once construction of the CGS is complete. Various towing points, fairleads and bollards will be integrated into the construction of the base caisson to allow the Marine Contractor (not incorporated in the Scope of the CGS Contractor) to connect to the CGS. The fully completed CGS will be floated out of the graving dock and towed to a deep-water site in Placentia Bay for installation of the topsides (refer to Figure 7).

Figure 7: Float out of CGS from Graving Dock

In order to pre-qualify for the above scope, respondents must demonstrate they have the proven capability, capacity and experience to construct such a concrete structure. Following areas of expertise associated with the construction of CGS, hereinafter called the Work will be required and need to be adequately demonstrated by the respondents:

- Extensive experience of heavy civil engineering projects
- Management and supervision of large civil engineering construction sites
- Construction of large concrete structures incorporating slip forming techniques
- HSEQ procedures and policies
- Procurement of equipment and consumable materials
- Management and execution of large steel fabrication scopes of work and integration with concrete structures
- Ownership and management of civil engineering construction equipment e.g. tower cranes, batching plant, site transportation, and offices/warehouses
- Skilled and competent labour force
- Marine experience and interface with marine contractors
- Pre commissioning/commissioning of pipe work

In addition to above requirements, the respondents must demonstrate expertise in the following areas:

- Overall management of a large civil engineering site
- Initial establishment in a green field construction site including layout and mobilization of office facilities, infrastructure and associated equipment
- Technical, HSE and business risk management as it applies to large heavy civil onshore developments
- Operations and safety risk management for large heavy civil developments
- Robust QH/QC procedures for the projected scope of work
- Engagement of the local market place for fabrication of structural assemblies, appurtenances, mechanical equipment, ballast, de-ballast, and instrumentation
- Management of labour relations, which includes relationship with provincial trades unions, collective bargaining, administration and interpretation of various types of construction collective agreements, grievance management, dispute resolution, supply and retention of qualified labour, and managing productivity. (Pre-qualified bidders will be required to complete a Labour Relations Questionnaire at the Bid stage)
- Management of the local community to invite local participation (i.e.) labour, and any other required services
- Establishment and operating offsite concrete batch plants, tower cranes and general site transportation
- Dewatering management; maintenance of installed system and monitoring during construction activities; including control of the ground water disposal in accordance with an agreed environmental protection plan.
- Technology selection, assessment and advice on current industry best practice
- Field Engineering capabilities and preparation of as-building documents, and progressive turnover of documentation
- Development of cost estimates and schedules for large heavy civil development projects
- Consultation and engagement with marine contractors with respect to preparations for the tow out of the CGS
- Restoration / reclamation of the construction site

Husky strongly supports providing opportunities to Canadian and, in particular Newfoundland and Labrador companies and individuals, on a commercially competitive basis. In accordance with the Framework Agreement between Husky, its Partners and the Province of Newfoundland and Labrador, Husky's expectation is that the successful contractor / consortium or joint venture for the CONCRETE GRAVITY STRUCTURE – CONSTRUCTION, will work with the local labour force and maximize participation from the local marketplace. Pre-qualified bidders will be required to complete a Canada/Newfoundland and Labrador Benefits Questionnaire at the Bid stage.

Please provide one (1) original and one (1) copy of your formal response no later than **2:00pm NST on 24 January 2013** to the address as shown below:

Husky Energy Inc.
Suite 901, Scotia Centre
235 Water Street
St. John's, NL Canada
A1C 1B6

Attn: Mark Collett, Procurement Manager
Fax: (709) 724-4034

Any submission which is not received by (2:00 PM NST 24 January 2013) will be returned to sender, unopened, and will not be given any further consideration as part of this procurement process